REMARKS

Applicant acknowledges that the examiner has withdrawn the indicated allowability of the remaining claims 15-20 of the instant application in view of the newly cited reference USP 5,045,963 (Hansen et al.) in the supplemental IDS dated May 22, 2003.

In the present Office action, dependent claims 18 and 19 were rejected under 35 USC 112, paragraph 2, because the exact meaning of the phrase "to within levels considered safe" was not considered definite. Applicant respectfully traverses the indefiniteness rejection of claims 18 and 19 on this basis. It is respectfully pointed out that the current, voltage and energy considered within safe levels is well defined in paragraph 18 on page 6 of the specification (see particularly lines 11 through 17). Accordingly, since the phrase is well defined in the specification and the meaning clear and definite, it is respectfully requested that the indefiniteness rejection of claims 18 and 19 be withdrawn.

Also in the present Office action, claims 15-20 were rejected under 35 USC 103(a) as being unpatentable over Hansen et al., of record. In response, independent claim 15 is amended to render amended claim 15 patentably distinguishable over Hansen et al. Support for the amendments to claim 15 are found in the original claims 1-14, now cancelled, and in Figures 2-4 and their associated text in the specification of the instant application. No new matter is being added to the instant application by the amendments being made to claim 15. Accordingly, amended claim 15 and original claims 16-20 dependent therefrom are considered patentably distinguishable from Hansen et al. based on the following reasons.

Hansen et al. teach a protective circuit for the induction coil of a magnetically inductive flow meter. Hansen et al. is concerned with inadvertent open circuits causing sparking in an explosive risk zone and short circuits causing an overload on the supply. Hansen utilizes circuits 21 and 121 within the explosive risk zone 5 (see Figure 1) to protect against sparking due to open circuits (see col. 5, lines 3-21) and utilizes circuits 7 and 107 outside of the zone 5 (see Figures 1 and 4) to protect against short circuits (see col. 5, lines 22-57). The circuitry of Figure 4 does offer some overvoltage protection by the zeners 12 and 112. Circuits 7 and 107 are coupled in series with the electrical paths 3 and 4, respectively. Each circuit contains two current limiting parts 8 and 9, and 108 and 109, depending on the direction of current. While one part is active to permit passage of current through a NPN transistor, then other part is inactive (i.e. NPN

transistor is non-conducting) and current is passed through a bridging diode (see 10, 11, 110, 111).

Both parts of the Hansen et al. circuit 8 and 9, for example, utilize a control circuit which monitors the voltage across a series resistor R1 to control the bias current through the active NPN transistor. The control circuits utilize resistors and capacitors to smooth the control of the in series NPN transistors. While the Hansen et al. circuit appears to be satisfactory for controlling and protecting the current levels to an inductor coil, its bridging diodes and control circuitry renders it inadequate for controlling currents for an accurate sensing of fuel quantity levels.

In contrast, amended claim 15 recites "at least one first field effect transistor coupled to said impedance element in series with said current path upstream of said impedance element, each said at least one first field effect transistor having a source and gate connected respectively to an upstream side and a downstream side of said impedance element, and controlled directly by the voltage potential across said impedance element to impose a series resistance to said current of said electrical pathway proportional to the voltage potential of a first polarity across said impedance element; and at least one second field effect transistor coupled to said impedance element in series with said current path downstream of said impedance element, each said al least one second field effect transistor having a source and gate connected respectively to the downstream side and the upstream side of said impedance element, and controlled directly by the voltage potential across said impedance element to impose a series resistance to said current of said electrical pathway proportional to the voltage potential of a second polarity across said impedance element.".

Hansen et al. neither teach nor suggest first and second field effect transistors having their gate to source voltage controlled directly by the voltage across the in series impedance element. Rather, the circuitry of Hansen et al. requires control circuits T3 and T4 and RC networks to monitor the voltage across the resistor R1 and convert it to a bias current to control the active conduction of one or the other of the NPN transistors T1 and T2. It also requires the use of bridging diodes 10 and 11 to bypass the current for the inactive (i.e. non-conducting) NPN transistor T1 or T2.

Applicant's transient suppression apparatus recited in amended claim 15 permits direct control of the first and second field effect transistors by the voltage potential across the series impedance element, and the polarity of the voltage across the impedance element controls which

first or second field effect transistor is in full conduction and which is imposing a series resistance to the current of the electrical pathway. Note that no bridging diode which effects discontinuities in operation and affects signal accuracy is needed. Also, by direct voltage control of the field effect transistors, the recited transient suppression apparatus of amended claim 15 contains substantially fewer components and is much simpler in design and operation than that taught and suggested by Hansen et al. Thus, amended claim 15 is considered patentably distinguishable over Hansen et al. for at least these reasons.

Further, while the examiner asserts that it would be obvious to extend the use of the Hansen et al. inductive flow meter to sensing a quantity of fuel in an aircraft fuel tank, there is no apparent motivation in Hansen et al. for such a modification. Hansen et al. neither teach nor suggest the use of the inductive flow meter design for aircraft fuel quantity application as recited in dependent claim 16. In addition, the bridging diodes of the Hansen et al. design affect signal accuracy to the point where the design would be inadequate for aircraft fuel quantity measurement applications. Thus, dependent claim 16 is considered patentably distinguishable over Hansen et al. for at least these reasons.

Still further, Hansen et al. neither teach nor suggest a transient suppression apparatus operative to limit the current, voltage and energy to the container caused by threats to the system to within levels considered safe as recited in claim 18. Rather, Hansen et al. teach apparatus 21 and 121 for protecting the risk explosive environment against open circuits and dangerous sparking (see col. 5, lines 3-21). Hansen's circuits 8, 9 and 108, 109 are provided to protect against short circuits and overloading of the supply 2 (see col. 5, lines 22-57). No teaching or suggestion is found in Hansen et al. regarding protecting against threats to the system. Threats are defined in the instant application in the first 4 lines of paragraph 18 starting on page 5. Thus, dependent claim 18 is considered patentably distinguishable over Hansen et al. for at least these reasons.

Further yet, Hansen et al. neither teach nor suggest that the protective circuits 8,9 and 108, 109 are operative to limit the current, voltage and energy to the container caused by failures of the system to within levels considered safe as recited in claim 19. Rather, Hansen et al. teach apparatus 21 and 121 for protecting the risk explosive environment against open circuits and dangerous sparking (see col. 5, lines 3-21). Hansen's circuits 8, 9 and 108, 109 are provided to protect against failures such as short circuits, but for overloading of the supply 2 and not to limit

the current, voltage and energy to the container to within levels considered safe (see col. 5, lines 22-57). Thus, dependent claim 19 is considered patentably distinguishable over Hansen et al. for at least these reasons.

In any event, since the dependent claims 16-20 contain all of the limitations of their parent claim 15, they are also considered patentably distinguishable over Hansen et al. for at least the reasons given for amended claim 15.

In view of the above, the instant application is considered in condition for allowance and therefore, an early issuance thereof is earnestly solicited.

Respectfully submitted,

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